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Two New Cavernicolous *Kurasawatrechus* (Coleoptera,  
Trechinae) from the Northern Side of  
Central Honshu, Japan\*

*With 5 Text-figures*

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**ABSTRACT** Two new troglobiontic species of trechine beetles belonging to the genus *Kurasawatrechus* are described from two different limestone caves at the northern side of central Honshu, Japan. One of them, named *K. torigaii* in this paper, is closely related to *K. longulus* S. Uéno, but is readily distinguished from that species by the shape of pronotum and elytra, the glabrous sternites and the different form of male genitalia. The other new species is larger than any of the described forms of Japanese *Kurasawatrechus*, and is named *K. grandis*. It is probably related to *K. endogaesus* S. Uéno et Baba, but is mainly characterized by its peculiar body form and the degeneration of microsculpture on both pronotum and elytra.

In the present paper, the writer is going to describe two new species of *Kurasawatrechus* found in two limestone caves on the Japan Sea side of central Honshu. One of them was discovered nearly twenty years ago, but has not been properly described until now, mainly because the writer wished to revisit its habitat cave and to obtain additional material before naming it. However, his expectation has not been realized so far, and seems not to be fulfilled in near future. The other species appears to be extremely rare. Since a single male of this trechine was taken by the present writer, no additional specimens have been obtained in spite of repeated collectings made by his fellow biospeologists. Fortunately, both the new species are distinctive ones, and the writer prefers to introduce them into science at this time in view of the circumstances explained above.

*Kurasawatrechus torigaii* S. Uéno, sp. nov.

(Figs. 1–2)

Length: 2.95 mm (from apical margin of clypeus to apices of elytra).

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Closely allied to *K. longulus* S. Ueno (1973, p. 16, figs. 1–3) of Mt. Nyûgasayama, but the head is a little smaller, the pronotum is less contracted posteriorly and has much broader base, the elytra are larger, having perfectly effaced shoulders, very oblique prehumeral borders and evidently arcuate sides, the sternites are glabrous, the aedeagus is thicker, hardly bent at the basal part and has shorter apical lobe, and the styles are larger.

Colour the same as in *K. longulus*. Head similar in shape and structure to that in *K. longulus*, though relatively small and devoid of frontal hairs and suprafrontal setae; submentum with a transverse row of nine setae; antennae extending slightly beyond basal one-third of elytra, with segment 2 about three-fourths as long as segment 3 and about five-sixths as long as segment 4; antennal segments 7–10 more elongate than those in *K. longulus*, each slightly less than five-ninths as wide as long, apical one about as long as segment 3. Pronotum ample, wider than long, widest at two-thirds from base and equally narrowed in front and behind, though the basal part is broad owing to the backward dilatation of sides; PW/HW 1.30, PW/PL 1.13, PW/PA 1.29, PW/PB 1.21; surface moderately convex though obviously less so than in *K. longulus*, the pubescence being reduced to a longitudinal row of six hairs on each side of median line and a few scattered ones on either side of the row; sides moderately arcuate in front, distinctly sinuate at basal one-fourth, and then divergent again towards hind angles, which are large though sharp; base slightly bisinuate, evidently wider than apex, PB/PA 1.07; median line widening near base; basal transverse impression with a foveole on each side of median line; other features as in *K. longulus*. Elytra oval and convex, widest at about four-ninths from base and equally narrowed in front and behind; EW/PW 1.55, EL/EW 1.44; shoulders perfectly effaced, with humeral borders very oblique to the base (in *K. longulus*, the shoulders are almost effaced, but the short prehumeral borders are gently arcuate and not very oblique); sides narrowly bordered, nearly straight behind shoulders, moderately arcuate at middle, feebly so behind, and hardly emarginate before apices, which are separately rounded and form a fairly large re-entrant angle at suture; striation as in *K. longulus*, though the 8th stria is deeply impressed in apical half; other features as in *K. longulus*.

Microsculpture as in *K. longulus*, though more irregular on elytra. Chaetotaxy normal; setiferous dorsal pores on stria 3 situated at about basal two-ninths and about middle; sternites 3–5 with a pair of setae along each posterior margin; anal sternite with a pair of sexual setae in ♂. Prosternum with a few hairs at the median part; sternites glabrous. Legs somewhat longer and slenderer than those in *K. longulus*; protibiae moderately dilated towards apices though hardly bowed, entirely pubescent and not externally grooved; mesotarsal segment 1 a little shorter than segments 2–3 together; metatarsal segment 1 obviously longer than segments 2–3 together but a little shorter than segments 2–4 together; in ♂ protarsus with two proximal segments moderately dilated and inwardly produced at apices.

Male genital organ very small and rather poorly sclerotized. Aedeagus a little

less than two-sevenths as long as elytra, tubular, fairly thick, and gently arcuate from base to apex; basal part hardly bent ventrad, with small basal orifice, the lateral sides of which are deeply emarginate; sagittal aileron well developed though not large; viewed laterally, apical lobe fairly broad, curving ventrad and subtruncated at the extremity; viewed dorsally, apical lobe broad and nearly parallel-sided, though obviously shorter than in *K. longulus*, with the tip roundly subtruncated; ventral side nearly straight behind middle. Copulatory piece large and spatulate, with the margin indistinctly serrulate. Styles large and broad, left style obviously longer than the right; in the holotype, left style provided with four apical setae, while the right bears five apical setae.

Female unknown.

*Type-specimen.* Holotype: ♂ (4-VII-1970, collected by S. Uéno and deposited in the collection of the National Science Museum, Tokyo).

*Type-locality.* Limestone cave called "Hyakkendaki-dô", at Akada of Suganuma, in Miyagawa-mura, Gifu Prefecture, at the northern side of central Honshu, Japan.

*Notes.* Hyakkendaki-dô Cave lies near the northern edge of the Hida Highlands at an elevation of about 860 m. It is about 100 km distant to northwest from Mt. Nyûgasa-yama (type-locality of *K. longulus*) and about 90 km distant to southwest from Fuku-ga-kuchi Cave (type-locality of *K. grandis*). There are two caves on either side of a narrow valley, which is one of the tributaries of the Jinzû-gawa River that empties into the Japan Sea. That on the left side is called "Nikoi-dô" and is smaller than that on the right side, which is called "Hyakkendaki-dô". The latter is a narrow cave, extending along a subterranean stream for more than 300 m. The entrance section is especially narrow and winding, and leads to the stream through a room of breakdown. The single known specimen of *K. torigaii* was found from under a fist-sized stone lying at the bottom of a muddy groove in the dark zone, at the depth of about 50 m. Although Nikoi-dô Cave maintains a richer fauna than Hyakkendaki-dô Cave, no trechines were found there.

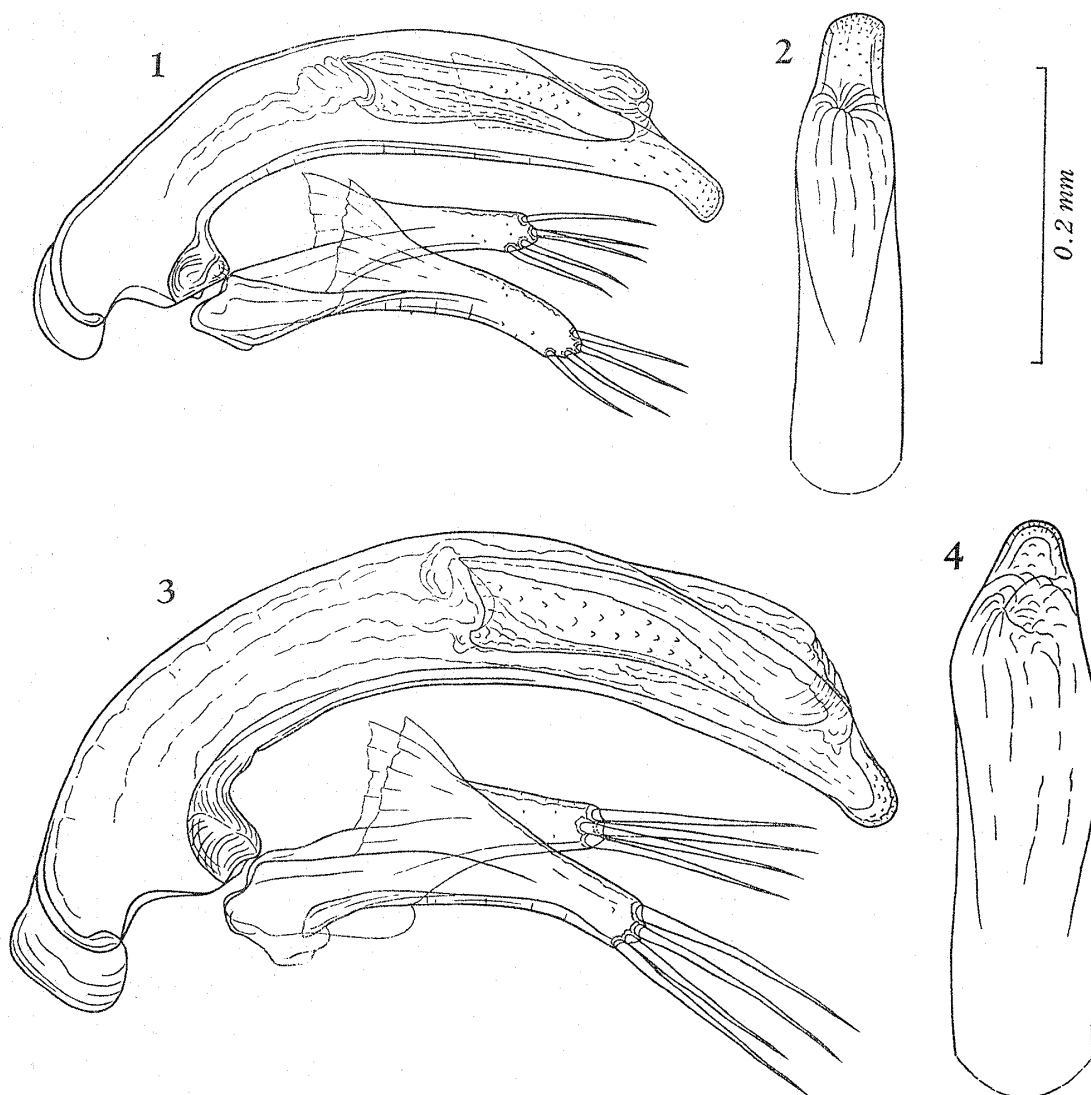
This new species is dedicated to Mr. Hyôji Torigai, whose kind aid made the writer's investigation of the cave fauna of the Suganuma area possible.

***Kurasawatrechus grandis* S. Uéno, sp. nov.**

(Figs. 3-5)

Length: 3.80 mm (from apical margin of clypeus to apices of elytra).

Probably related to *K. endogaeus* S. Uéno et Baba (1965, p. 17, figs. 1-2) of Mt. Yoné-yama, but the colour is lighter, the fore-body is obviously narrower, the pronotum is more elongate and more regularly cordate, the elytra are larger and have more strongly rounded sides, the microsculpture is more or less degenerated on pronotum and elytra, the appendages are slenderer, and the aedeagus has broader apical part and contains larger copulatory piece. Closer in several respects to *K.*



Figs. 1-4. Male genitalia, left lateral view (1, 3), and apical part of aedeagus, dorsal view (2, 4). — 1-2. *Kurasawatrechus torigaii* S. Uéno, sp. nov., of Hyakkendaki-dô Cave.  
— 3-4. *K. grandis* S. Uéno, sp. nov., of Fuku-ga-kuchi Cave.

*spelaeus* S. Uéno (1958, p. 129) of Kugô-dô Cave in Gifu Prefecture, but larger, having relatively small fore-body and large oval elytra. The pronotum of *K. grandis* is much narrower at base than in *K. spelaeus* and has smaller basal part, and the elytral apical stria of the former is directed to the 7th stria instead of the 5th.

Colour reddish brown, shiny, translucent when alive; palpi, antennae (segments 3-4 more or less darker than the remaining ones), ventral side of hind body, and legs light yellowish brown.

Head subquadrate, about as long as wide, with frontal furrows deep and moderately arcuate; genae gently convex only at the posterior part, so that the sides of

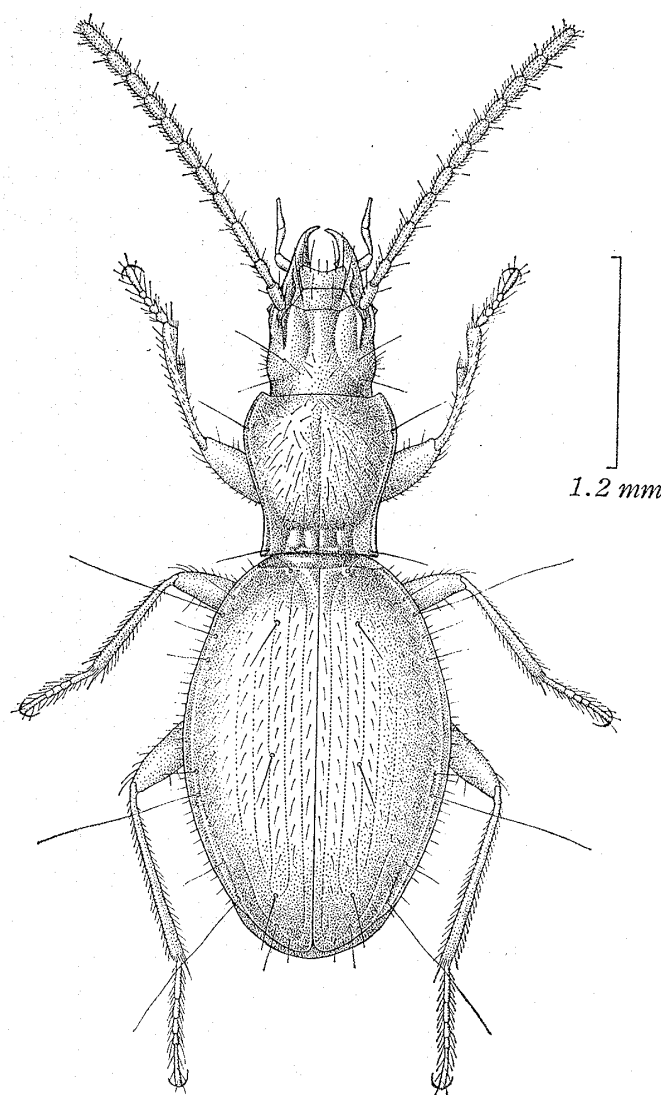


Fig. 5. *Kurasawatrechus grandis* S. Uéno, sp. nov., ♂, of Fuku-ga-kuchi Cave in Niigata Prefecture.

head are parallel to each other in apical half; vertex sparsely covered with fairly long hairs; mentum tooth narrow and porrect, either truncated or emarginate at the tip; palpi relatively slender; antennae stout, slightly dilated towards apices, reaching basal three-tenths of elytra; antennal segment 2 about four-sevenths as long as segment 3 and evidently shorter than segment 4, which is about five-sixths as long as segment 3, segments 7–10 oval, each nearly twice as long as wide, apical segment slightly shorter than segment 3.

Pronotum cordate, as wide as long, widest at about five-sevenths from base, and equally contracted in front and behind; PW/HW 1.42–1.44, PW/PL 1.00–1.02, PW/PA 1.37–1.38, PW/PB 1.29–1.37 (mean 1.33), PB/PA 1.00–1.07 (mean 1.03);

surface convex and covered with long suberect hairs; sides smooth and bare, narrowly bordered, moderately rounded in front, distinctly but not sharply sinuate around basal two-ninths, and then slightly divergent towards sharp hind angles; front angles small and rather obtuse, though gently advanced; base as wide as apex or slightly wider than the latter, nearly straight or slightly bisinuate; median line slightly widening near base; other features as in *K. endogaeus*. Elytra large, oval and convex, widest at about four-ninths from base, and equally narrowed towards base and apices, with narrow basal part; EW/PW 1.68–1.72 (mean 1.70), EL/EW 1.43–1.44; shoulders practically effaced, with very oblique prehumeral borders; sides rather widely reflexed, rather strongly rounded at middle, less so behind and only very slightly emarginate before apices, which are separately rounded and form a small re-entrant angle at suture; striation as in *K. endogaeus*; pubescence on intervals fairly long.

Microsculpture of head distinct and reticulate, deeply impressed on frons and supraorbital areas but becoming fainter on vertex and neck, the meshes being isodiametric on frons, more or less oblique on supraorbital areas, large and more or less wide on the posterior part; that of pronotum poorly defined and partially obliterated, consisting of fine transverse lines that form irregular wide meshes here and there; that of elytra nearly obsolete, though composed of wide polygonal meshes which are discernible especially on the apical part.

Chaetotaxy normal; submentum with a transverse row of seven setae (six in one of the specimens examined); elytral stria 3 with two setiferous dorsal pores at about basal one-seventh and around middle; preapical pore situated at the apical anastomosis of striae 2 and 3, close to apical striole, and more distant from apex than from suture; sternites 3–5 usually with two pair of setae along each posterior margin; anal sternite with a pair of sexual setae in ♂.

Prosternum pubescent along the median part; sternites either entirely glabrous or with a few isolated hairs. Legs relatively slender; protibiae nearly straight, moderately dilated towards apices, entirely pubescent and not externally grooved; tarsi fairly thin, segment 1 about as long as segments 2–3 together in mesotarsus, evidently longer than segments 2–3 together but shorter than segments 2–4 together in metatarsus; in ♂ protarsus with two proximal segments moderately dilated and inwardly denticulate at apices.

Male genital organ very small and rather poorly sclerotized. Aedeagus a little less than two-sevenths as long as elytra, tubular and regularly arcuate; basal part rather small and short, bearing moderately developed sagittal aileron; lateral sides of basal orifice rather deeply emarginate; apical lobe short, broad in profile, subtriangular in dorsal view, with the tip rather widely rounded in both lateral and dorsal views; ventral side evenly emarginate in profile. Copulatory piece large, spatulate and with serrulate margin. Styles as in *K. endogaeus*, though the apical setae are very long.

Female unknown.

*Type-series.* Holotype: ♂, paratypes: 2♂♂ (22-VIII-1954, collected by S. Uéno and deposited in the collection of the National Science Museum, Tokyo).

*Type-locality.* Limestone cave called "Fuku-ga-kuchi", at the northeastern foot of Mt. Kurohimé-yama, in Tômi of Ohmi-chô, Niigata Prefecture, on the Japan Sea coast of central Honshu, Japan.

*Notes.* This is the largest species of *Kurasawatrechus* hitherto described from Japan, and can be recognized at first sight on its characteristic form of elytra. It is also unique in the decrease in the number of setae on submentum, and is comparable in this regard with *Ishidatrechus* (*Suzuka*) *kobayashii* S. Uéno (1956, p. 75, figs. 3-4) of Samé-no-kô-mori-ana Cave in the Suzuka mountains.

Fuku-ga-kuchi is the largest limestone cave on the Japan Sea side of Honshu. Its large entrance is open on a cliff at the left side of the Tômi-gawa River, about 4 km distant to the south from the seashore and about 200 m above sea-level. An underground torrent flows through it, forming a very deep pool just inside the entrance and gushing out from there as a high waterfall. Because of this waterfall, the opening of the cave can be located from a distance.

In former times, a boat was necessary to explore the cave. Later, however, artificial tunnels were dug by a cement manufactory from the opposite side of the hill, and the cave became accessible through those tunnels. On the other hand, entry to the cave has been rigidly prohibited by the manufactory, so that even a survey of the main gallery has not been made until now. The present writer has sought for an opportunity to revisit the cave and to make fuller investigations of the fauna. Unfortunately, his efforts have failed so far, and the new trechine has been known only from a short series of specimens obtained by his single visit. They were sporadically found on the banks of the subterranean stream, always from under stones lying on muddy floor.

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